

CLAIMS

We claim:

- Sub A 3
1. An extensible file access method for accessing a foreign file system from a local data processing system with a native file system, said foreign file system being located on a remote data processing system, said foreign file system having a set of foreign file attributes corresponding to each of a plurality of files in the foreign file system, and said native file system having a set of native file attributes corresponding to each of a plurality of files in the native file system, said method comprising the steps of:
 - generating a request from a client on the local data processing system to the remote data processing system to open a foreign file in the foreign file system;
 - opening of the of the foreign file by the foreign file system;
 - sending of the file attributes of the foreign file, hereinafter foreign file attributes, to the local data processing system;
 - storing of the foreign file attributes by the local data processing system;
 - accessing of the foreign file attributes stored in the local data processing system by the local data processing system client to process the foreign file; and
 - processing by the local data processing system client the foreign file using the stored foreign file attributes.
 2. The method of claim 1 further comprising the steps of:
 - determining a subset of the foreign file attributes which are equivalent to a corresponding subset of file attributes of the native file system, the subset of the foreign file attributes hereinafter known as conventional file attributes;
 - returning the conventional file attributes to the client; and
 - storing a remaining subset of the foreign file attributes which are not equivalent to a corresponding subset of file attributes of the native file system, the remaining subset of the foreign file attributes hereinafter known as extended file attributes.

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1 7. An article of manufacture for use in a computer system for accessing a foreign file
2 system from a local data processing system data processing system with a native file system,
3 said foreign file system being located on a remote data processing system, said foreign file
4 system having a set of foreign file attributes corresponding to each of a plurality of files in the
5 foreign file system, and said native file system having a set of native file attributes
6 corresponding to each of a plurality of files in the native file system, said article of manufacture
7 comprising a computer-readable storage medium having a computer program embodied in said
8 medium which causes the computer system to execute the method steps comprising:

9 generating a request from a client on the local data processing system to the remote data
10 processing system to open a foreign file in the foreign file system;

11 opening of the of the foreign file by the foreign file system;

12 sending of the file attributes of the foreign file, hereinafter foreign file attributes, to the
13 local data processing system;

14 storing of the foreign file attributes by the local data processing system;

15 accessing of the foreign file attributes stored in the local data processing system by the
16 local data processing system client to process the foreign file; and

17 processing by the local data processing system client the foreign file using the stored
18 foreign file attributes.

19 8. The article of manufacture of claim 7 wherein the method steps further comprise the
2 steps of:

3 determining a subset of the foreign file attributes which are equivalent to a
4 corresponding subset of file attributes of the native file system, the subset of the foreign file
5 attributes hereinafter known as conventional file attributes;

6 returning the conventional file attributes to the client; and

7 storing a remaining subset of the foreign file attributes which are not equivalent to a
8 corresponding subset of file attributes of the native file system, the remaining subset of the
9 foreign file attributes hereinafter known as extended file attributes.

Sub A 1 9 The article of manufacture of claim 8 wherein the method steps further comprise the steps of:

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3 accessing of the foreign file by the client via a protocol of the native file system, the
4 accessing being performed in a similar manner to accessing a native file system file; and
5 accessing of the foreign file by the client by use of the extended file attributes, the
6 accessing being performed via a protocol different from the native file system protocol.

1 10. The article of manufacture of claim 8 wherein the storing step further comprises:
2 starting an expiration timer corresponding to the extended file attributes; and
3 removing the extended file attributes from the local data processing system storage after
4 the expiration of the expiration timer.

5 11. The article of manufacture of claim 8 wherein the sending of the foreign file attributes
6 is performed by a web server located on the remote system, the web server being capable of
7 sending and receiving messages via a network.

8 12. The article of manufacture of claim 8 wherein the method steps further comprise the steps of:
9 storing the extended file attributes in a shared memory portion of the local data
10 processing system storage which is accessible by the client and other local data processing
11 system processes;
12 associating a unique handle with the extended file attributes; and
13 providing the unique handle to a local data processing system process to enable the
14 local data processing system process to access the extended file attributes.

1 13. A distributed computer system for accessing a foreign file system from a local data
2 processing system with a native file system, said foreign file system being located on a remote
3 data processing system, said foreign file system having a set of foreign file attributes
4 corresponding to each of a plurality of files in the foreign file system, and said native file
5 system having a set of native file attributes corresponding to each of a plurality of files in the
6 native file system, said distributed computer system comprising:

7 a requestor for generating a request from a client on the local data processing system to
8 the remote data processing system to open a foreign file in the foreign file system;

9 a foreign file which can be opened by the foreign file system;

10 a sender for sending the file attributes of the foreign file, hereinafter foreign file
attributes, to the local data processing system;

storage for storing of the foreign file attributes by the local data processing system;

a file access for accessing the foreign file attributes stored in the local data processing
system by the local data processing system client to process the foreign file; and

a processor for processing by the local data processing system client the foreign file
using the stored foreign file attributes.

14. The distributed computer system of claim 13 further comprising:

a comparator for determining a subset of the foreign file attributes which are equivalent
to a corresponding subset of file attributes of the native file system, the subset of the foreign
file attributes hereinafter known as conventional file attributes;

a data transfer for returning the conventional file attributes to the client; and

storage for storing a remaining subset of the foreign file attributes which are not
equivalent to a corresponding subset of file attributes of the native file system, the remaining
subset of the foreign file attributes hereinafter known as extended file attributes.

Sub 1 A6
15. The distributed computer system of claim 14 further comprising:
2 a file access for accessing by the client the foreign file via a protocol of the native file
3 system, the accessing being performed in a similar manner to accessing a native file system
4 file; and
5 a file access for accessing by the client the foreign file by use of the extended file
6 attributes, the accessing being performed via a protocol different from the native file system
7 protocol.

1 16. The distributed computer system of claim 14 wherein the storage further comprises:
2 an expiration timer corresponding to the extended file attributes; and
3 storage access for removing the extended file attributes from the local data processing
4 system storage after the expiration of the expiration timer.

1 17. The distributed computer system of claim 14 wherein the sender of the foreign file
2 attributes is a web server located on the remote system, the web server being capable of
3 sending and receiving messages via a network.

1 18. The distributed computer system of claim 14 further comprising:
2 a shared memory portion of the local data processing system storage which is accessible
3 by the client and other local data processing system processes for storing the extended file
4 attributes;
5 a unique handle associated with the extended file attributes; and
6 a local data processing system process which uses the unique handle to enable the local
7 data processing system process to access the extended file attributes.